The Whole Life House

portfolio
submission
ref 2014

A built work won through open competition. It formed part of Scotland's Housing Expo in 2010 that featured a series of exemplar buildings looking at contemporary ideas for sustainable housing and urbanism. The building looks beyond technological understandings of environmental design towards addressing social and economic sustainability through adaptation strategies over the life of the building. The Whole Life House won the House of the Year prize at the Scottish Housing Awards 2011. (Image : Nigel Rigden)

ESALA
Edinburgh School of Architecture & Landscape Architecture

project
The Whole Life House

output 2
John Brennan

project introduction

The Whole Life House

An architectural design, exhibition piece and permanent built work. Its originality lies in a contemporary interpretation of rural and suburban housing form. The project addresses the research question of how to make private sector housing more resilient and sustainable through adaptation. This is a field with little applied research and the context of this live project allowed latitude for experimentation and speculation. However, at its heart, the building is a realised outcome of a theoretical research proposition, that in use succeeds in its intentions. The project introduces the concept of soft flexibility as design generator, making explicit linkages to social and economic sustainability design strategies. The output's significance lies in the built realisation and validation of a theoretical proposition. It introduces for the first time adaptive strategies to the UK private housing sector. It was a key exhibit at Scotland's Housing Expo, an event showcasing contemporary and innovating housing design that attracted in excess of 30,000 visitors. The output's rigour is demonstrated through peer review in the open design competition for Expo inclusion. Additionally its innovation was recognised in winning the House of the Year Prize at the Scottish Design Awards in 2011. The work was featured in both the general and specialist press

The design addresses the challenges of making resilient and sustainable communities in suburban and rural conditions. It responds to the fact that over 40% of household relocations in Scotland are because of the unsuitability of housing stock[1]. It tests how spatial organisation can produce dwellings that anticipate change through the application of 'soft flexibility'[2]. Thehe house is divided into two – a core dwelling with living, kitchen and some sleeping accommodation along with an annexe block that allows varying degrees of interdependence with the main building. The functions of the annexe are deliberately not clearly defined. It can be entered directly from the lobby of the building and has services provided for kitchen and bathroom facilities.

The building responds to vernacular form, colour and symmetry with a conscious attempt to root the building in an episodic and sometimes chaotic exhibition environment. This was recognised in respect of the whole life house being illustrated as an example of best practice in the Scottish Government PAN 83 policy document on masterplanning. The building includes a carefully considered environmental strategy that includes passive solar glazing, high thermal mass floors, night shuttering and sunspaces as part of the design.

In terms of impact, the Whole Life house was a key exhibit at Scotland's Housing Expo in 2010 attracting 30 000 visitors. The building was featured in a series of on site and online lecture and workshop sessions. The WholeLife House intended to address challenges in the private sector . This was recognised in the award of House of the Year at the Scottish Homes Awards 2011. The work is a vehicle for further research into rural and sustainable housing. The building process is investigated by the author in a book chapter within the recently published Aesthetics of Sustainable Architecture. The building was published and reviewed in in Building Design and The Observer, It forms a part of the Scottish Govenment Publication Scotland's Housing Expo

The Whole Life house was undertaken as practice based research with Brennan and Wilson Architects. John Brennan was responsible for the initial and detail design of the work until building tender stage including all drawings . Following this he was jointly collaborated with Julie Wilson for post tender design adjustments and on-site construction. All drawings and photograph unless credited otherwise by John Brennan

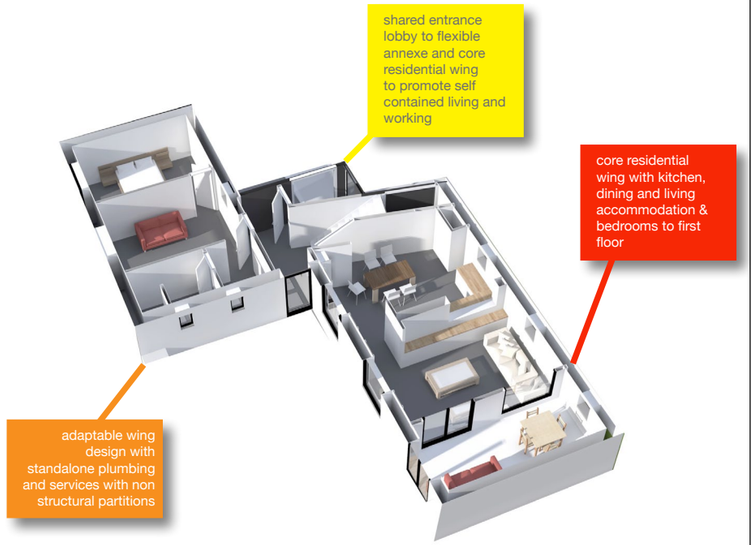
Peer recognition and review:

A winner in the Highland Housing Fair Competition [2007] organised by RIAS.
House of the Year. Scottish Homes Awards [2011]
Building recorded by the Royal Commision on the Ancient and Historical Monuments in Scotland.

Author references.

Brennan, John. "Quantitative and Qualitative Traditions in Sustainable Design." In The Aesthetics of Sustainable Architecture, edited by Sang Lee. Rotterdam: 010 Publishers, 2011.
Brennan, John. "New Perspectives on Rural Development" presented at RIAS Seminar, Inverness, March 2011.
Brennan, John. "The WholeLife House" presented at the SUST Seminar Series, August 2010.
Brennan, John. "The WholeLife House at Scotland's Housing Expo." CIC Start Online Innovation Review 1, no. 4 (2010): 21-25.
Brennan, John. "Learning From Scotlands Housing Expo".CIC Start Online Conference Webinar Glasgow, 2011.
Benedict, James. "Scotlands Housing Expo." Building Design. London, August 13, 2010.
The work was also featured in the following newspapers : The Scotsman and The Observer

1 Scottish Government Social Research, "Scottish housing aspirations survey". Edinburgh. Scottish Government, 2006
2 Schneider, Tatjana. Till, Jeremy. "Flexible Housing". Amsterdam: Architectural Press, 2007.



key massing of the WholeLife House

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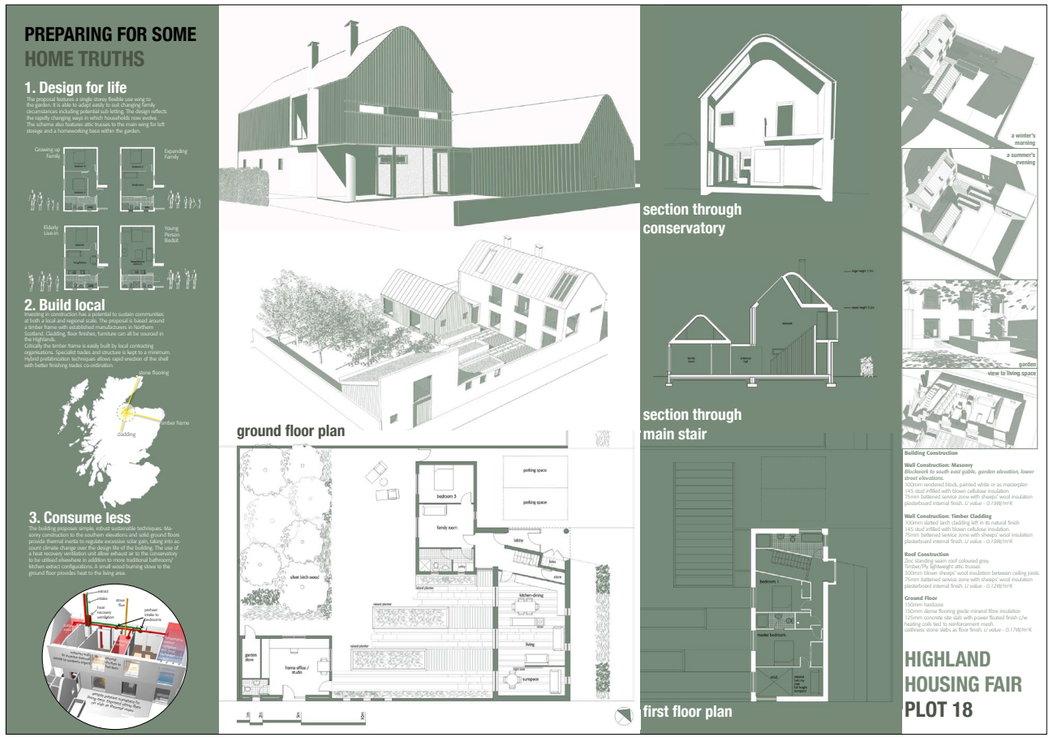

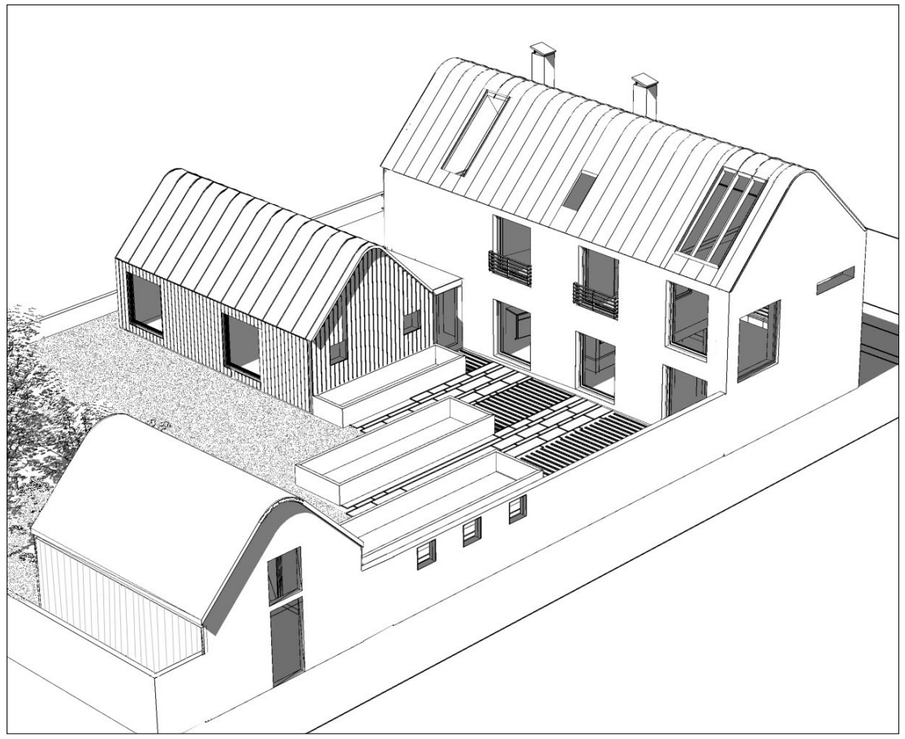

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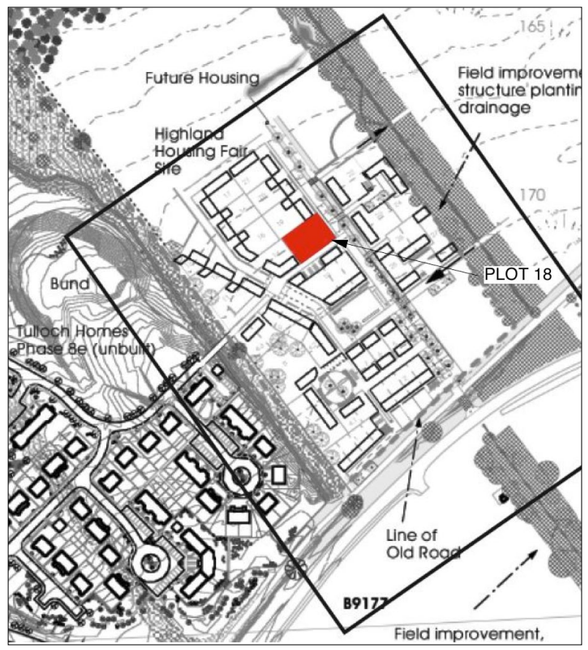
1. Winning competition entry: The original competition asked for proposals for each site in the expo village. At this early stage an emphasis on adapatbility as a means of interrogating different pathways to sustainable design was investigatied.
2. View of original proposal showing separate home office, which remained unbuilt.
3. Expo masterplan (image Cadell2 Architects) The masterplan was based on the concept of a Highland township or Lochan, oriented around a town square.
4. Site plan showing location of whole life house
5. Scotland's Housing Expo August 2010. The exhibion attracted 30 000 visitors and was supported through as series of lectures, seminars and presentations.



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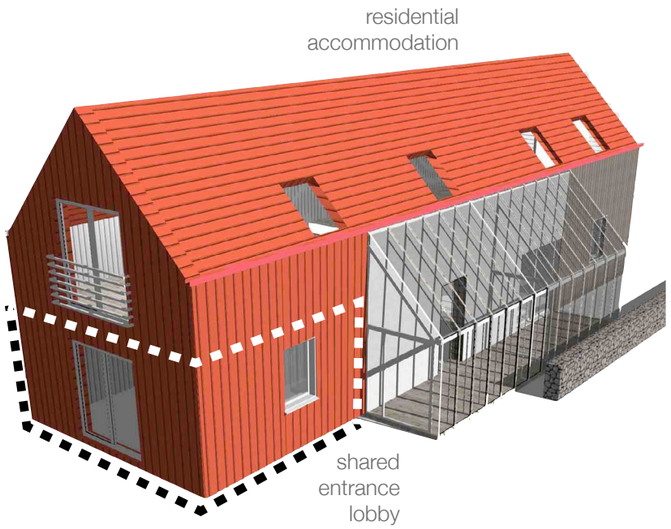
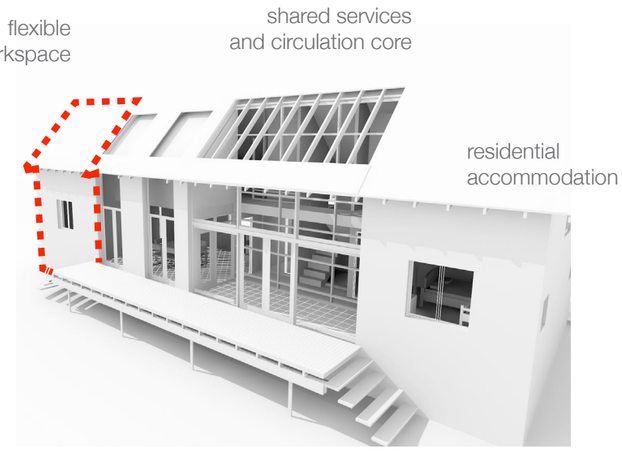
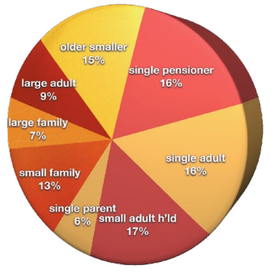
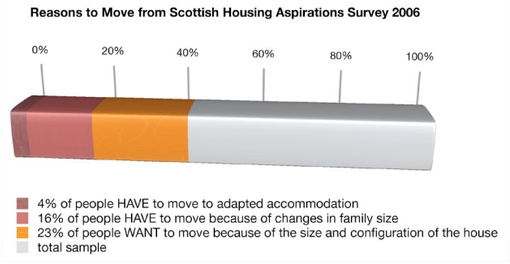
1. Adaptibility precedent: Our practice has worked for a number of years on flexible live-work housing types in rural locations. Although different in form the the wholelife house - this scheme in Perhshire, designed in 2007 looks at shared preoccupations with entrance and connection/separation of the workplace.
2. Adaptability precedent: Woodbank Housing for New Lives New Landscapes with flexible live work and hybrid prefabrication. This scheme was completed by our practice in 1998 where we were specifically asked to look at live-work accommodation in low density rural sites and how these might be integrated in building.
3. Adaptable Annexe to Whole Life house - options showing different configurations. This shows how the annexe can address the complex household configurations we now see. It is formulated in response to government data on household size and characteristics.
4. Part plan view show main disposition of planning elements. This shows as a schematic the key breakdown of the house into fixed and adaptable parts.





adaptability and the home:
what might we mean by whole life?
source: Housing Standards for Scotland. Key Trends 2007-2008





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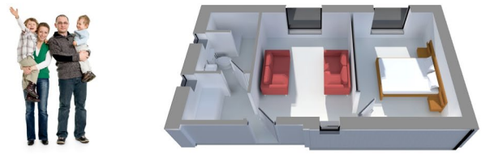
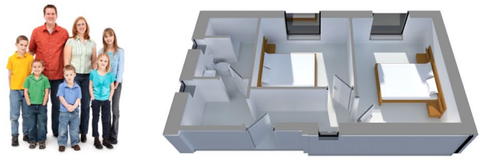
young family
The annexe is used as a guest bedroom with a family room attached. If desired, the dividing partition can be removed to make a single space for a larger family room or home office

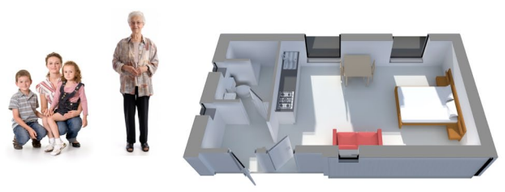


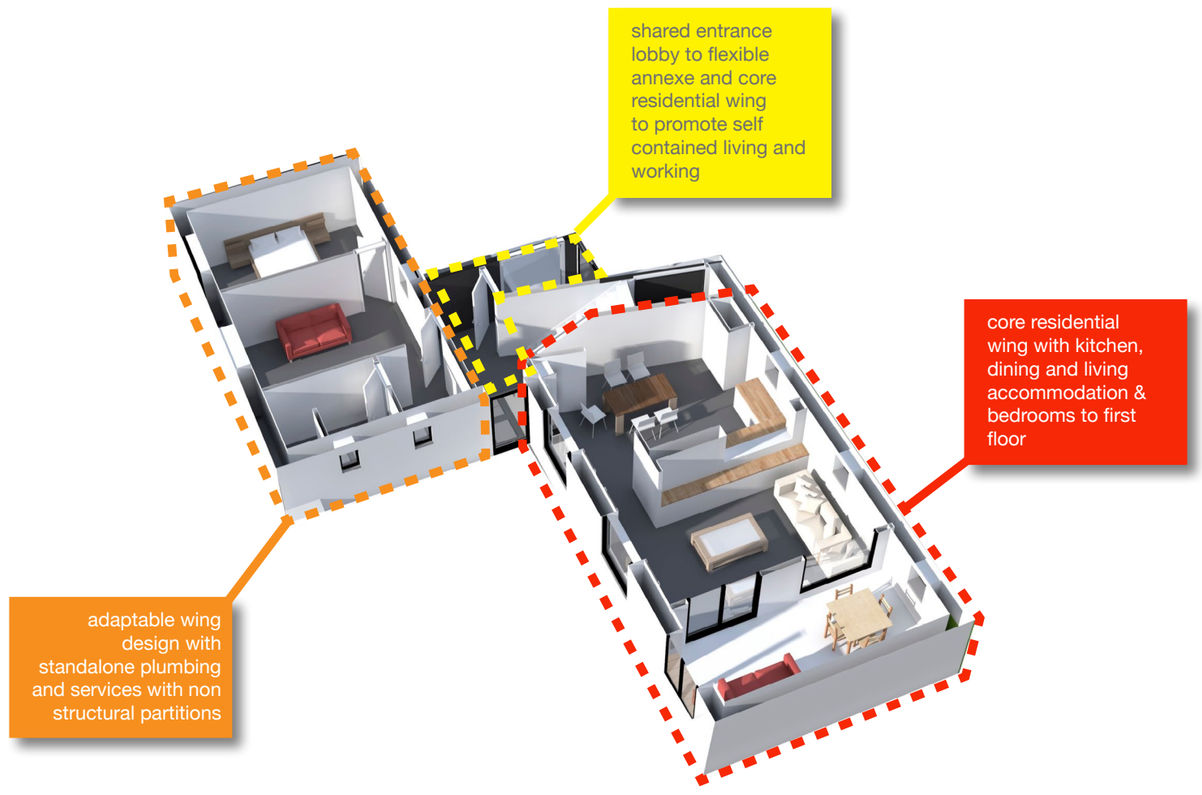
large family
With three or more children, space can be at a premium. In this case the annexe wing can be utilised for two additional bedrooms, to provide a four bedroom home with a ground floor bathroom close by.



young adult at home
With mobility reduced by high rental and house purchase costs, more and more young adults are staying at home. In this case, the annexe wing can be made into a small self contained flat with galley kitchen and separate bedroom.

elderly relative
In this configuration, the annexe is converted into a large single room to enhance mobility. The shared entrance and galley kitchen encourage independence and privacy when it's wanted.





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1. View down stairs to kitchen. Although built for private sector development, the house uses double height space and toplighting to animate key circulation spaces.

2. Integral sunspace to living room and master bedroom. The susnspace is sparing in its use of glazing to avoid too wide temparature swings and also to ensure the room is useable over longer periods in the winter months. Simple internal openings allow passive solar gain to percolate the main rooms.

3. Relationship between stair lobby and kitchen. This shows the shared entrance but separate access to annexe and main house.

4. Environmental response of building showing key low carbon strategies. These are current good sustainable pracrice - including underfloorheating heating/thermal mass combined with lightwight highly insulated timber frame. (based on visualisation by Nick Sharp)

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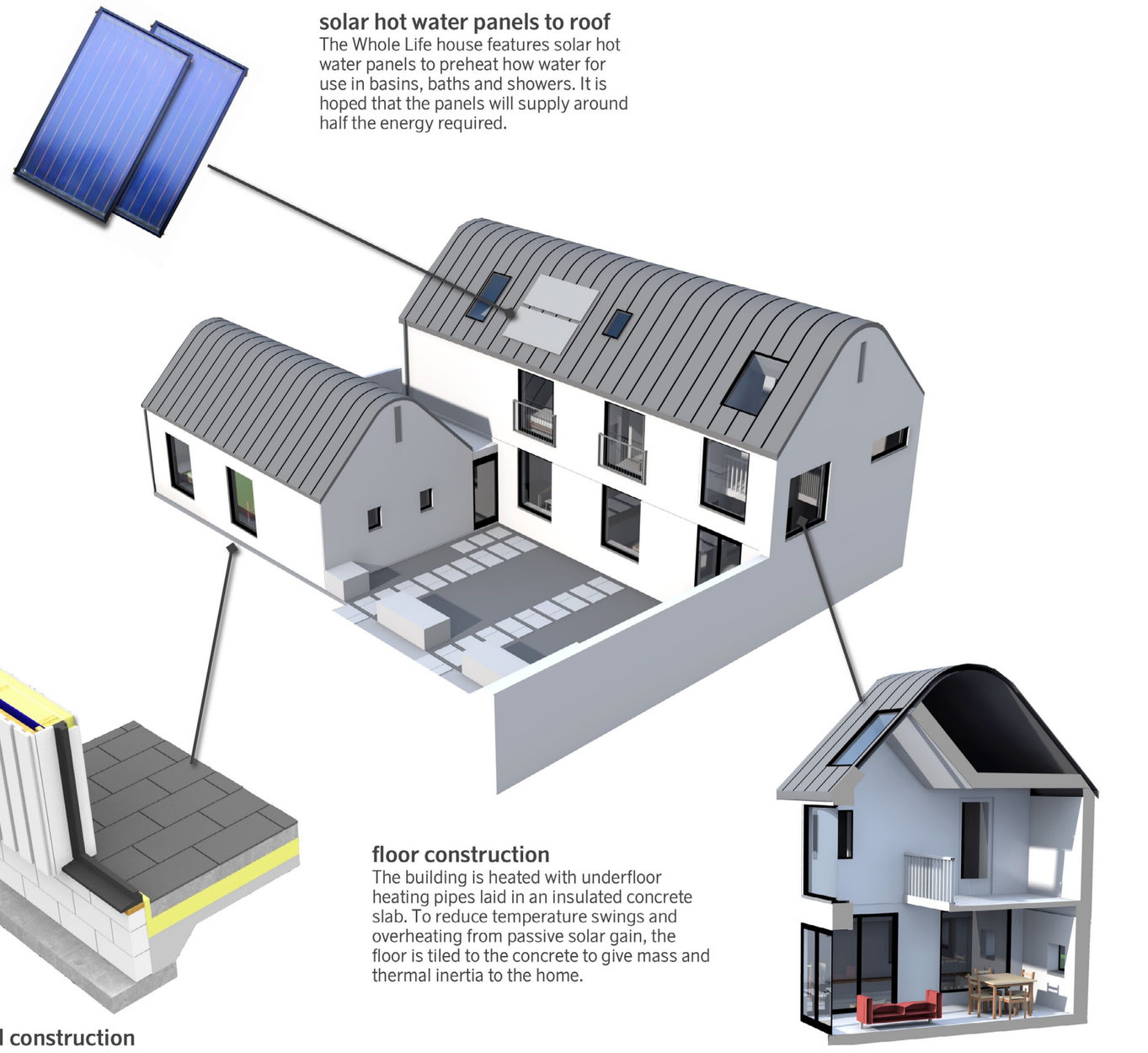

solar hot water panels to roof
The Whole Life house features solar hot water panels to preheat how water for use in basins, baths and showers. It is hoped that the panels will supply around half the energy required.

wall construction
The building is timber frame construction with locally sourced cladding. Insulation is placed between the timber studs. An additional services cavity is formed to the building interior. This allows the main structure to be sealed effectively to reduce air leakage from the building. The services cavity is also infilled with insulation. By placing the fixing battens horizontally, thermal bridging is reduced.

floor construction
The building is heated with underfloor heating pipes laid in an insulated concrete slab. To reduce temperature swings and overheating from passive solar gain, the floor is tiled to the concrete to give mass and thermal inertia to the home.

the sunspace
The house is oriented with most windows to the south, with the north face of the building less heavily glazed. The whole life house features a sunspace with roof glazing to admit passive solar gain. At night, it can be closed off from the heated core of the building.

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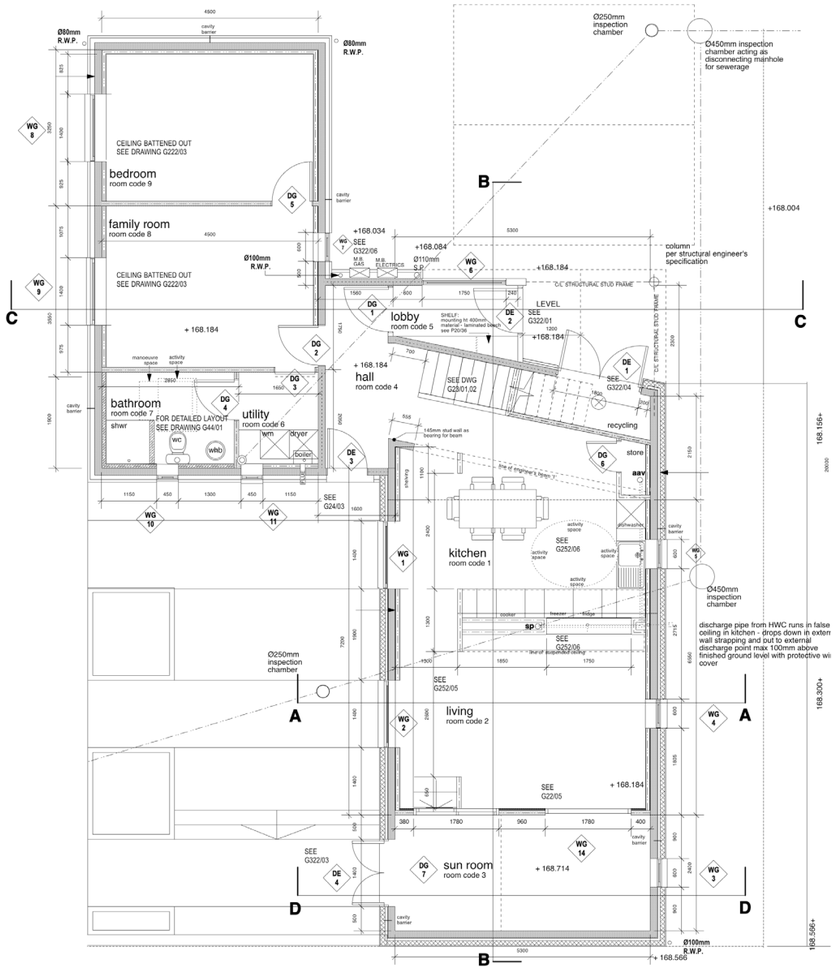

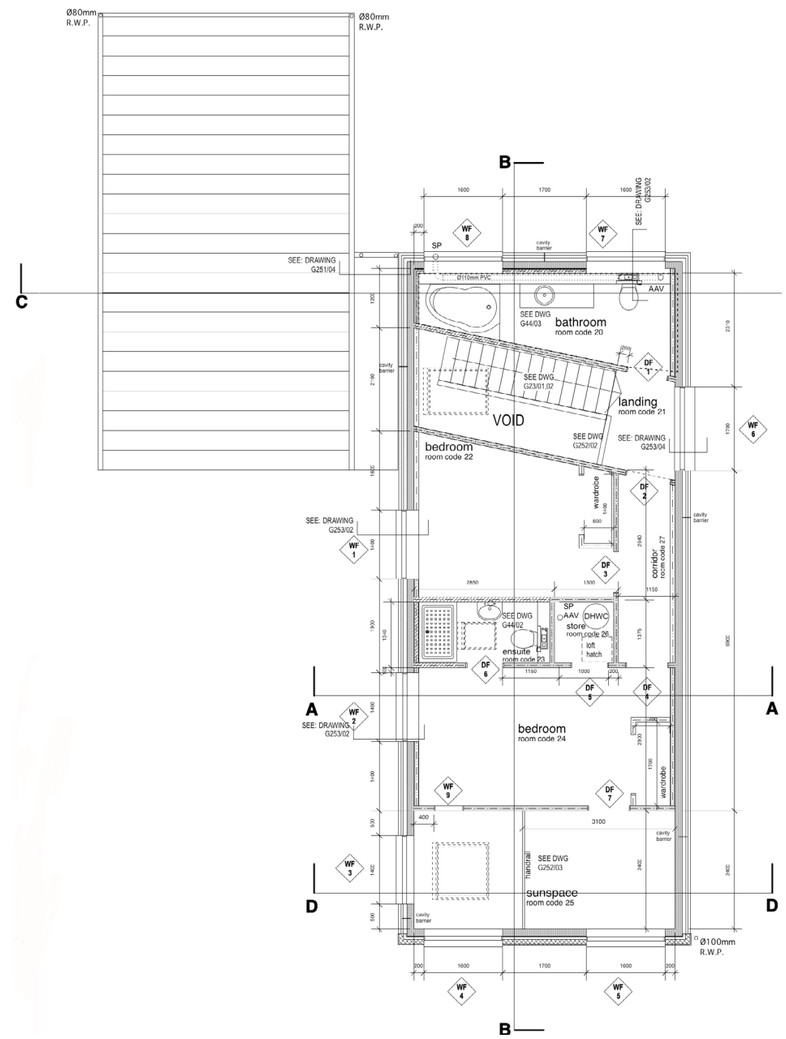

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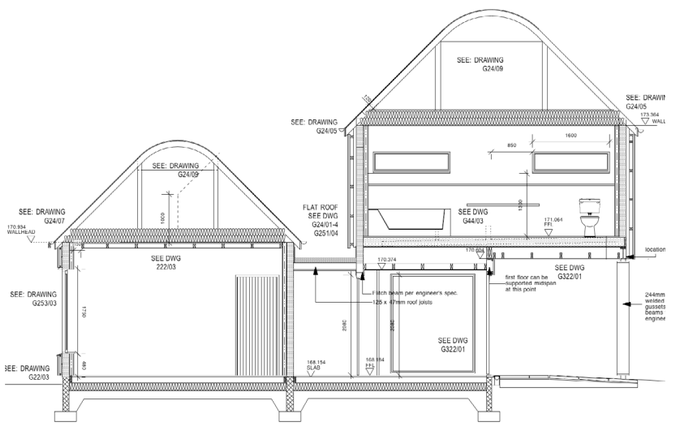
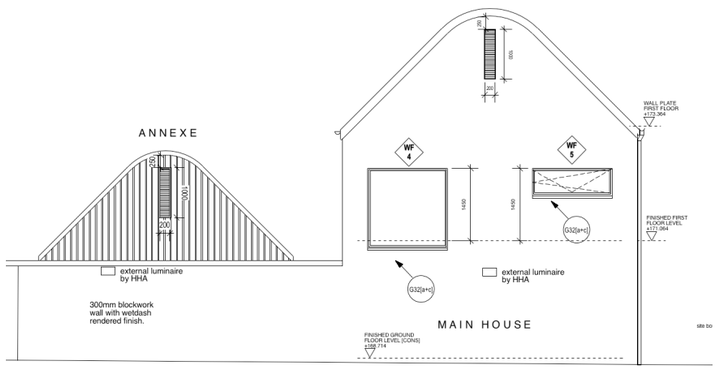
1. ground floor plan
2. first floor plan
3. section through lobby and flexible annexe
4. east elevation





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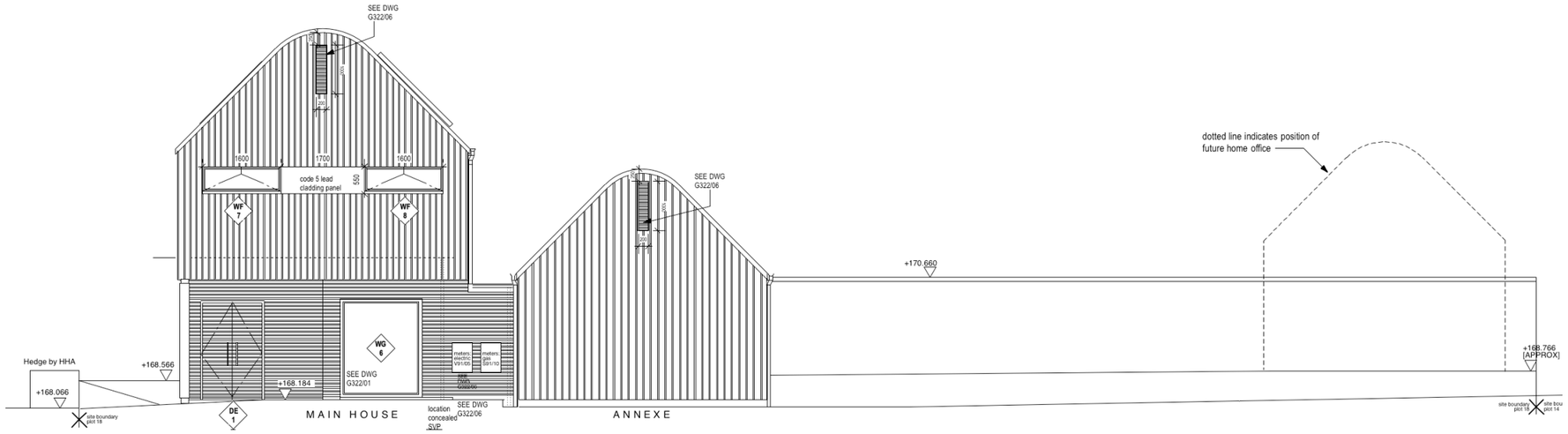

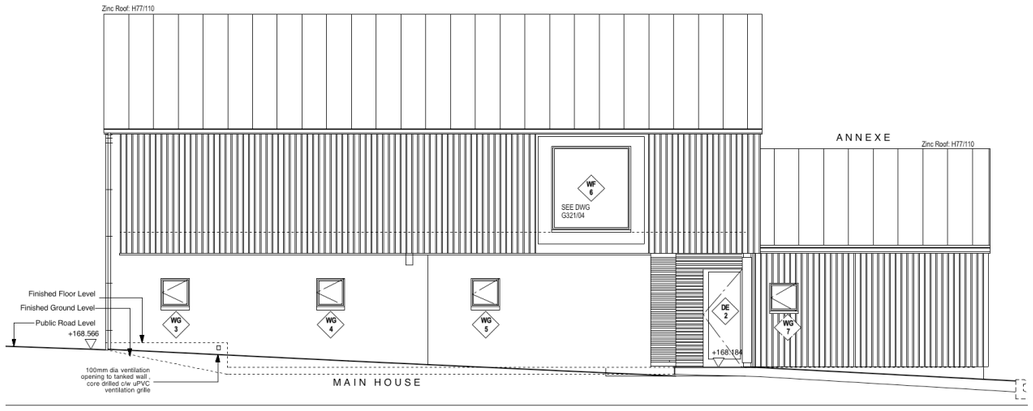

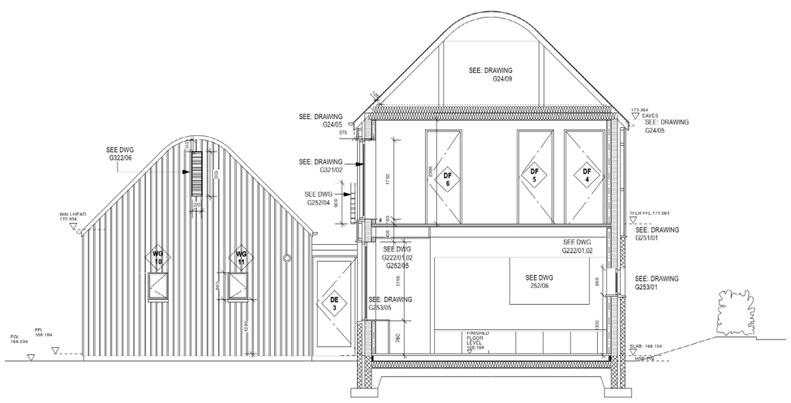

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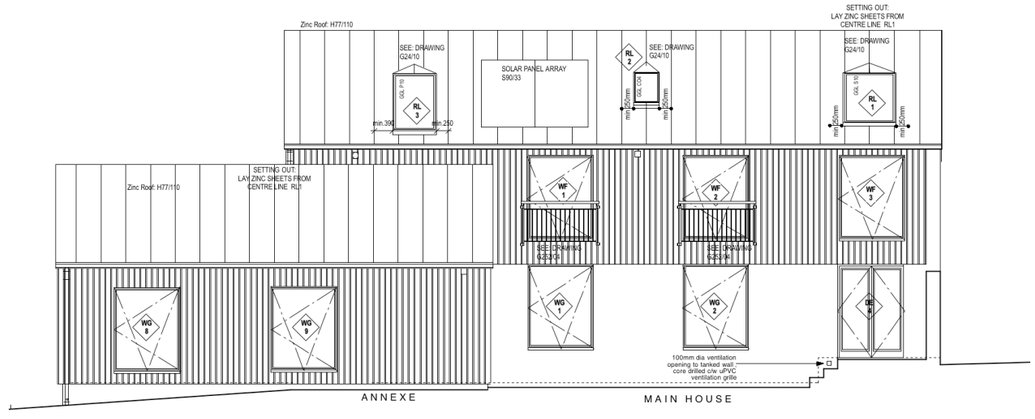
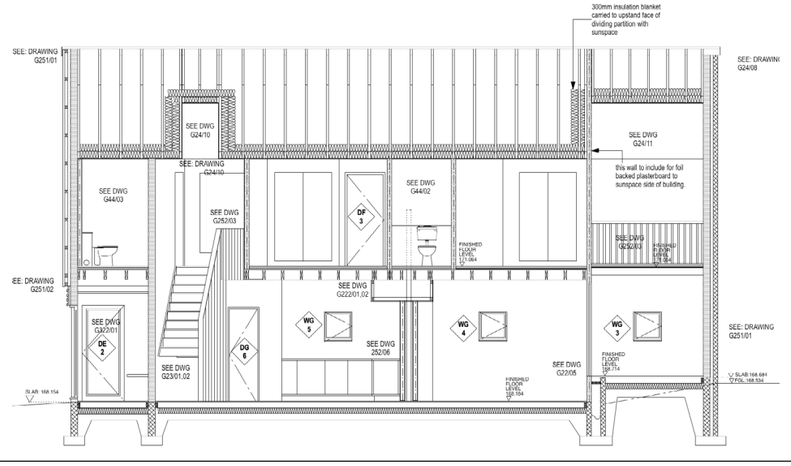
1. western elevation
2. north elevation
3. section through living room and bedroom
4. south elevation
5. section through main house





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